

CLAIMS

What is claimed is:

1. A computer based method for interactively configuring a network
5 device comprising:
displaying a document to a user of a client computer wherein said document
comprises a configuration for said device in a text format and wherein said client
computer is coupled via a network to said network device;
editing said document to make a change in said configuration; and
10 sending said change in said configuration to said device.
2. The computer based method as recited in Claim 1 further comprising
requesting said configuration from said network device wherein said displaying is
performed upon receiving said configuration in response to said request.
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3. The computer based method as recited in Claim 1 wherein said
editing comprises said user changing text comprising said configuration document
and wherein said editing is performed upon said client computer.
- 20 4. The computer based method as recited in Claim 1 wherein said
editing comprises interacting with said network device.
5. The computer based method as recited in Claim 4 wherein said
interacting comprises:
25 sending a first code component from said client computer to said network
device; and

receiving a second code component from said network device at said client computer in response to said sending said first code component.

6. The computer based method as recited in Claim 5 wherein said
5 interacting comprises initiating an automatic completion of a command entered by said user into said text, wherein said first code component comprises a textual fragment of said command, wherein said second code component comprises said command in its entirety, and wherein said command in its entirety is added to said text.

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7. The computer based method as recited in Claim 5 wherein said interacting comprises automatically displaying a list of commands that are appropriate to a position in said text, wherein said first code component requests said list, wherein said second code component comprises said list, wherein said list
15 is displayed to said user, and wherein said user may select a command from said list for insertion into said text at said position.

8. The computer based method as recited in Claim 5 wherein said
interacting comprises performing a syntax check, wherein said first code component
20 initiates said syntax check, wherein said second code component comprises detection of an error in said configuration, and wherein said document is updated to display said error.

9. The computer based method as recited in Claim 1 further comprising
25 sending said configuration in its entirety to said network device.

10. The computer based method as recited in Claim 1 wherein said sending said change in said configuration comprises sending said change in said configuration without sending an unchanged component of said configuration to said network device.

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11. The computer based method as recited in Claim 10 wherein said sending comprises:

forming a transport object wherein said transport object contains code comprising said change; and

10 disposing said transport object within a transport medium.

12. The computer based method as recited in Claim 11 wherein said code comprises a command.

15 13. The computer based method as recited in Claim 12 wherein said command is rendered in Command Line Interface format.

14. The computer based method as recited in Claim 11 wherein said transport medium comprises an interface and wherein said interface substantially
20 complies with Common Object Request Broker Architecture.

15. The computer based method as recited in Claim 14 wherein said forming a transport object comprises embedding said code within a set of tags and wherein said tags comprise Extensible Markup Language markers.

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16. The computer based method as recited in Claim 11 wherein said transport medium comprises a serial line interface.

17. The computer based method as recited in Claim 11 wherein said transport medium comprises Telnet .

5 18. The computer based method as recited in Claim 11 wherein said transport medium comprises Secure Shell.

19. A computer based system for interactively configuring a network device, comprising:

10 an application for providing a development environment;
a text editing tool co-functional with said development environment application, for editing a document wherein said document comprises a configuration for said network device;
a user interface co-functional with said development environment application,
15 for displaying said document to said user and allowing said user to make a change to said document;
a code generator co-functional with said user interface, for generating code corresponding to said change;
a communication module co-functional with said code generator, for sending
20 said change to said device.

20. The computer based system as recited in Claim 19 further comprising an error handling module co-functional with said communication module, for detecting and handling an error in said change.

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21. The computer based system as recited in Claim 19 further comprising a change tracking module co-functional with said user interface for tracking said change.

5 22. The computer based system as recited in Claim 19 wherein said development environment comprises:

a highlighting module for selecting a part of said document to implement said change, and for indicating which parts of said document have been modified ; and

an undo manager for restoring said configuration to a state prior to

10 implementing said change.

23. The computer based system as recited in Claim 19 wherein said configuration is retrieved from said network device in response to a user request, wherein said change is made to said document interactively with said network
15 device, and wherein said change is made to said document interactively with said network device by a process comprising:

sending a first code component from said system to said network device; and

receiving a second code component from said network device at said system in response to said sending said first code component.

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24. The computer based system as recited in Claim 23 wherein said user request comprises a request selected from the group consisting essentially of:

initiating an automatic completion of a command entered by said user into said document, wherein said first code component comprises a textual fragment of said

25 command, wherein said second code component comprises said command in its entirety, and wherein said command in its entirety is added to said text;

requesting a list of commands that are appropriate to a position in said text,
wherein said first code component requests said list, wherein said second code
component comprises said list, wherein said list is displayed to said user, and
wherein said user may select a command from said list for insertion into said text at
5 said position; and

initiating a syntax check, wherein said first code component comprises said
request for said syntax check, wherein said second code component comprises a
detection of an error in said document, and wherein said document is updated to
display said error.

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25. The computer based system as recited in Claim 19 wherein said
change in said configuration is sent without sending an unchanged component of said
configuration to said network device and wherein said sending said change to said
network device comprises:

15 forming a transport object wherein said transport object contains code
comprising said change; and

disposing said transport object within a transport medium.

26. The computer based system as recited in Claim 25 wherein said
20 transport medium comprises a medium selected from the group consisting
essentially of:

an interface and wherein said interface substantially complies with Common
Object Request Broker Architecture;

a serial line interface;

25 Telnet; and

Secure Shell.

27. A computer usable medium having a computer readable program code therein for causing a computer system to execute a method for configuring a device, said method comprising:

displaying a document to a user of a client computer upon a request by said user to said network device wherein said document comprises a configuration for said device in a text format and wherein said client computer is coupled via a network to said network device;

editing said document to make a change in said configuration wherein said editing comprises said user changing text comprising said configuration document and wherein said editing is performed upon said client computer and wherein said editing comprises interacting with said network device; and

sending said change in said configuration to said device.

28. The computer usable medium as recited in Claim 27 wherein said interacting comprises:

sending a first code component from said client computer to said network device; and

receiving a second code component from said network device at said client computer in response to said sending said first code component.

29. The computer usable medium as recited in Claim 28 wherein said interacting comprises an action selected from the group consisting essentially of:

initiating an automatic completion of a command entered by said user into said text, wherein said first code component comprises a textual fragment of said command, wherein said second code component comprises said command in its entirety, and wherein said command in its entirety is added to said text;

requesting a list of commands that are appropriate to a position in said text,
wherein said first code component requests said list, wherein said second code
component comprises said list, wherein said list is displayed to said user, and
wherein said user may select a command from said list for insertion into said text at
5 said position; and

initiating a syntax check, wherein said first code component comprises a
request for initiating a syntax check, wherein said second code component
comprises detecting an error in said configuration, and
wherein said document is updated to display said error.

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30. The computer based medium as recited in Claim 28 wherein said
sending comprises sending said change in said configuration without sending an
unchanged component of said configuration to said network device and wherein said
sending comprises:

15 forming a transport object wherein said transport object contains code
comprising said change; and
disposing said transport object within a transport medium.

31. The computer usable medium as recited in Claim 30 wherein said
20 code comprises a command and wherein said command is rendered in Command
Line Interface format.

32. The computer usable medium as recited in Claim 30 wherein said
transport medium comprises a medium selected from the group consisting
25 essentially of:

an interface wherein said interface substantially complies with Common
Object Request Broker Architecture;

a serial line interface;

Telnet; and

Secure Shell.

5 33. A computer based system for configuring a network device,
comprising:

 means for displaying a document to a user of a client computer upon
receiving said configuration in response to a request from said user wherein said
document comprises a configuration for said device in a text format and wherein said
10 client computer is coupled via a network to said network device;

 means for editing said document to make a change in said configuration
wherein said editing means comprise means for allowing said user to change text
comprising said configuration document, wherein said editing means comprise an
application running on said client computer and wherein said editing means
15 cooperate with means for interacting with said network device; and
 means for sending said change in said configuration to said device.

 34. The computer based system as recited in Claim 33 wherein said
interacting means comprise:
20 means for sending a first code component from said client computer to said
network device; and
 means for receiving a second code component from said network device at
said client computer in response to said sending said first code component.

25 35. The computer based system as recited in Claim 34 wherein said
interacting means function to initiate an action by said network device wherein said
action is selected from the list consisting essentially of:

automatically completing a command entered by said user into said text,
wherein said first code component comprises a textual fragment of said command,
wherein said second code component comprises said command in its entirety, and
wherein said command in its entirety is added to said text;

5 sending a list of commands that are appropriate to a position in said text,
wherein said first code component requests said list, wherein said second code
component comprises said list, wherein said list is displayed to said user, and
wherein said user may select a command from said list for insertion into said text at
said position; and

10 performing a syntax check, wherein said first code component requests said
syntax check, wherein said second code component comprises detection of an error
in said configuration, and wherein said document is updated to display said error.

36. The computer based system as recited in Claim 34 wherein said
15 means for sending send said change in said configuration without sending an
unchanged component of said configuration to said network device and wherein said
sending means comprise:

 means for forming a transport object wherein said transport object contains
code comprising said change; and

20 means for disposing said transport object within a transport medium.

37. The computer based system as recited in Claim 36 wherein said
transport medium comprises a medium selected from the group consisting
essentially of:

25 an interface and wherein said interface substantially complies with Common
Object Request Broker Architecture;
 a serial line interface;

Telnet; and
Secure Shell.

38. A computer based programming tool for interactively configuring a
5 network device, comprising:
a component for providing a development environment;
a text editing component co-functional with said development environment
component, for editing a document wherein said document comprises a configuration
for said network device;
10 a user interface component co-functional with said development environment
component, for displaying said document to said user and allowing said user to
make a change to said document;
a code generating component co-functional with said user interface
component, for generating code corresponding to said change;
15 a communication component co-functional with said code generator, for
sending said change to said device.

39. The computer based programming tool as recited in Claim 38 further
comprising:
20 an error handling component co-functional with said communication
component, for detecting and handling an error in said change; and
a change tracking module co-functional with said user interface for tracking said
change.

25 40. The computer based programming tool as recited in Claim 38 wherein
said development environment comprises:

a highlighting component for selecting a part of said document to implement said change, and for indicating which parts of said document have been modified; and

an undo component for restoring said configuration to a state prior to
5 implementing said change.

41. The computer based programming tool as recited in Claim 38 wherein said configuration is retrieved from said network device in response to a user request, wherein said change is made to said document interactively with said
10 network device, and wherein said change is made to said document interactively with said network device by a process comprising:

sending a first code component from said system to said network device; and
receiving a second code component from said network device at said system
in response to said sending said first code component.

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42. The computer based programming tool as recited in Claim 41 wherein said user request comprises a request for an action selected from the group consisting essentially of:

requesting initiation of an automatic completion of a command entered by said
20 user into said document, wherein said first code component comprises a textual fragment of said command, wherein said second code component comprises said command in its entirety, and wherein said command in its entirety is added to said text;

requesting a list of commands that are appropriate to a position in said text,
25 wherein said first code component requests said list, wherein said second code component comprises said list, wherein said list is displayed to said user, and

wherein said user may select a command from said list for insertion into said text at said position; and

requesting initiation of a syntax check, wherein said first code component comprises said request for said syntax check, wherein said second code

5 component comprises a detection of an error in said document, and wherein said document is updated to display said error.

43. The computer based programming tool as recited in Claim 38 wherein said change in said configuration is sent without sending an unchanged component of
10 said configuration to said network device and wherein said sending said change to said network device comprises:

forming a transport object wherein said transport object contains code comprising said change; and

15 disposing said transport object within a transport medium.

44. The computer based programming tool as recited in Claim 43 wherein said transport medium comprises a medium selected from the group consisting essentially of:

20 a serial line interface;
Telnet; and
Secure Shell.

45. The computer based system as recited in Claim 43 wherein transport medium comprises an interface and wherein said interface substantially complies with
25 Common Object Request Broker Architecture.

46. The computer based system as recited in Claim 45 wherein said forming a transport object comprises embedding said code within a set of tags and wherein said tags comprise Extensible Markup Language markers.